UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ATHENS, GA

DATE: JAN 19 1979

SUBJECT: Investigation of Selected Surface Water and Groundwater Supplies, Jefferson and Hardin Counties, KY, January 10-11, 1979

FROM: Chief, Water Surveillance Division

TO: Paul Traina

SUMMARY

Attached is a copy of the subject investigation.

Based on the data collected, the domestic and private water supplies were not contaminated from seepage or runoff from the chemical drum storage sites during our investigation.

Stump Gap Creek upstream from the drum disposal area at the farm and the West Point raw water will be resampled during the week of January 22, 1979.

ACTION

For your information.

It is my understanding that the Water Supply Branch will forward analytical results of the private and public wells to the appropriate individuals and municipal or military officials.

Michael R. Carter MRC

cc: with report
Alec Little
Sarah Turnipseed
Tom Devine/John Dickinson
Asa Foster/Gary Hutchinson
Jim Finger

EPA FORM 1320-6 (REV. 3-76)

INVESTIGATION OF SELECTED SURFACE WATERS
AND GROUNDWATER STUDIES
JEFFERSON AND HARDIN COUNITES, KENTUCKY
JANUARY 10-11, 1979

GENERAL

Messrs. Michael R. Carter and William R. Davis, Water Surveillance Branch, US-EPA, Clark Bledsoe, Jefferson County Health Department, and Roger Conn, Kentucky Department for Natural Resources and Environmental Protection, Solid Waste Division, conducted a water quality and domestic groundwater study of possible contaminated water in conjunction with the clean-up operation at the 13.68 acre farm in Jefferson County, KY and the Brickyard drum storage site in Hardin County, KY during January 10-11, 1979.

SAMPLE LOCATIONS

13.68 Acre Farm

Surface water samples were collected from two locations (Figure 1) in Stump Gap Creek. One sample (STG-1) was collected approximately 200 yards downstream from the drum disposal area and the other sample (STG-2) was collected approximately 0.5 mile upstream from the drum disposal area at the culvert under Katharyn Station Road.

Four samples were collected from private wells located (Figure 1) in the vicinity of the farm. However, there were no wells located southeast, or downgrade, of the drum disposal area. The well water samples were collected from the cold water tap located within the residences after allowing the water to run for more than five minutes. The following provides pertinent information relative to the groundwater samples:

Station No.	Address	Type Well	Depth of Well
BLC-1	Mrs. Effie Sevremes Bennies First & Last Chance 16611 Dixie Highway West Point, KY 40177	Drilled	100 feet
CM-1	Constance Morris 16706 Abbott Beach Rd. West Point, KY 40177	Drilled	75 feet
HD-1	Harold Davis 16810 Abbott Beach Rd. West Point, KY 40177	Drilled	65 feet
TK-1	Thomas Kasey 17108 Abbott Beach Rd. West Point, KY 40177	Drilled	Unknown

Wells at the following locations were located within 100 feet of the Ohio River; CM-1, HD-1, and TK-1. The well at Station BLC-1 was located approximately 300 feet from the Ohio River.

Brickyard

One surface water sample (BB-1) was collected from an unnamed tributary to Bee Branch (Figure 2). The sample site is located immediately downgrade from the Brickyard between the Illinois Central Railroad and U. S. Highway 31W.

Groundwater samples were collected from three locations in the vicinity of the Brickyard (Figure 2) as described below:

Station No.	Address	Type Well	Depth of Well
BP-1	Bill Priddly Auto Co. 22600 Dixie Highway West Point, KY 40177	Drilled	Unknown
FK-1	Joe Chaudoin Director of Facilities Engineering Environmental and Energy Control Office Fort Knox, KY 40121	Drilled	110-160 feet
WP-1	West Point Water Dept. 509 Elm Street West Point, KY 40177	Drilled	Unknown

Station BP-1 was the only private well located near the Brickyard. This well is approximately 0.4 mile south of the Brickyard.

Stations FK-1 and WP-1 are public water supply systems serving Fort Knox (and Muldrough, KY) and West Point, KY, respectively. The sample from Station FK-1 was collected prior to chlorination. Although the investigators were informed that the sample from Station WP-1 was collected prior to chlorination, it was determined after the analyses were completed that it was a finished water sample with chlorine.

SAMPLING PROCEDURES

Samples for non-volatile organic analysis were collected directly into solvent rinsed one quart glass containers with Teflon lined lids. Samples for volatile organic analysis were collected directly into specially prepared 60 ml glass vials.

All samples were kept refrigerated from time of collection until delivery to the EPA laboratory in Athens, GA. Chain-of-custody was maintained on all samples.

RESULTS

No hexachlorocyclopentadiene, octachlorocyclopentene, or hexachlorobenzene were detected in any sample (minimum detection limit - 1 µg/l). No chlorinated hydrocarbon pesticides were found in any sample (minimum detection limit - 1 µg/l). No other nonchlorinated, extractable organics were detected in any sample (minimum detection limit - 2 µg/l). No other volatile organic compounds were detected at concentrations greater than 5 µg/l.

Chlorinated and brominated compounds were detected in the sample collected from Station WP-1. However, the results of analyses are questionable since the sample was collected and prepared in the laboratory as non-chlorinated raw water. Some of the chlorinated compounds are indicative of contamination resulting from the extraction of a chlorinated sample with methlene chloride.

The only surface water sample which contained organic compounds was Station STC-2, Stump Gap Creek upstream from the farm. Two benzenesulfonamide compounds, tentatively identified as trimethyl benzene sulfonamide and butyl methyl benzene sulfonamide, had estimated concentrations of 13.0 µg/l and 6.2 µg/l, respectively. These compounds were not identified in the drums during EPA's 1977 investigation. Toluene was identified in the VOA sample at 74 µg/l. This compound was identified in several of the drums during the 1977 investigation. However, the sample integrity is questionable since the sample container was cracked and had partially leaked prior to analyses. Because of the severe flood in December 1978 and the frozen conditions during the investigation, the samples which were collected do not represent typical conditions. Organic compounds may be detectable in the water phase during dry weather conditions and immediately following the snowmelt or rainstorm events. Also, there is a higher probability of detecting organic compounds in sediments than in the water phase. Because of the ice, it was not possible to collect representative sediment samples.

ANALYTICAL RESULTS

Sample STC-2 (Stump Gap Creek)

	Concentration µg/l
Trimethyl benzene sulfonamide	13 1/ 2/
Butyl methyl benzene sulfonamide	6.2 1/ 2/
2 unidentified compounds	5 1/ 2/
Toluene	74 4/

1/ - Estimated concentrations.
2/ - Tentative identifications.
3/ - The compounds were not identified in the laboratory blank.
4/ - Identified; however, sample container was cracked and sample had partially leaked out. The sample integrity is questionable and results of analyses should not be used.

Sample WP-1 (West Point) 5/

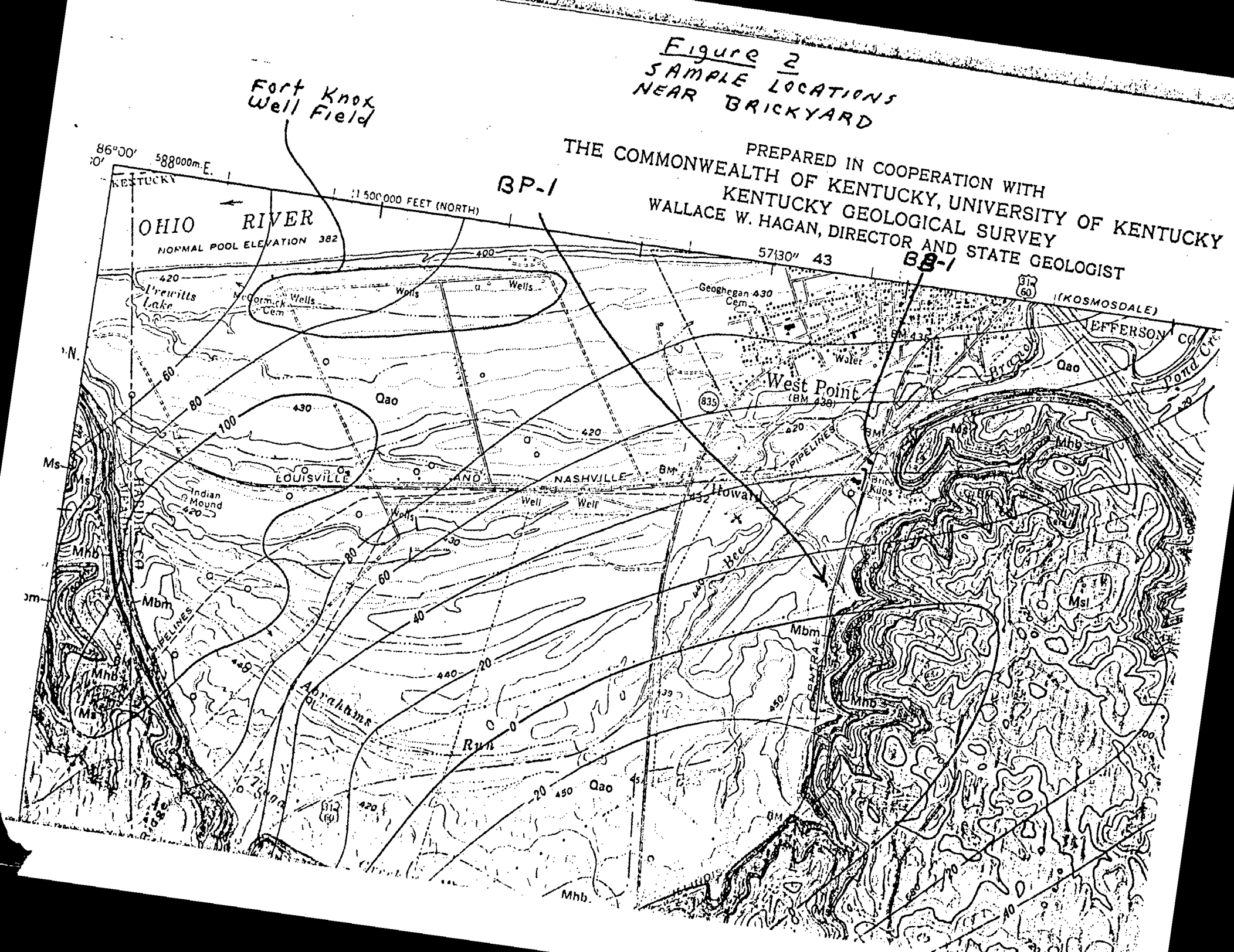
	Concentration µg/l
Naphthalene	3.4 4/
Bromochlorocyclohexane	19 1/ 4/
Chlorocylohexanol 2/	3.4 1/ 4/
Dichlorocyclohexane (2 isomers) 2/	11 1/ 4/
Bromocyclohexanol 2/	140 1/ 4/
Bromochlorocyclohexanol 2/	<1 1/ 4/
2 unidentified brominated compounds	<1 1/ 4/
Bromoform	Trace <5 3/
Dibromochloromethane	5.2 3/

1/ - Estimated concentration compared to naphthalene.
2/ - Tentative identification.
3/ - These compounds were not detected in either the laboratory or field blank.
4/ - These compounds were not detected in the laboratory blank.
5/ - All results of analyses are questionable since the sample was collected and prepared in the laboratory as a nonchlorinated raw water. Some of the chlorinated compounds are indicative of contamination resulting from the extraction of a chlorinated sample with methlene chloride.

The following minimum detection levels apply to all samples.

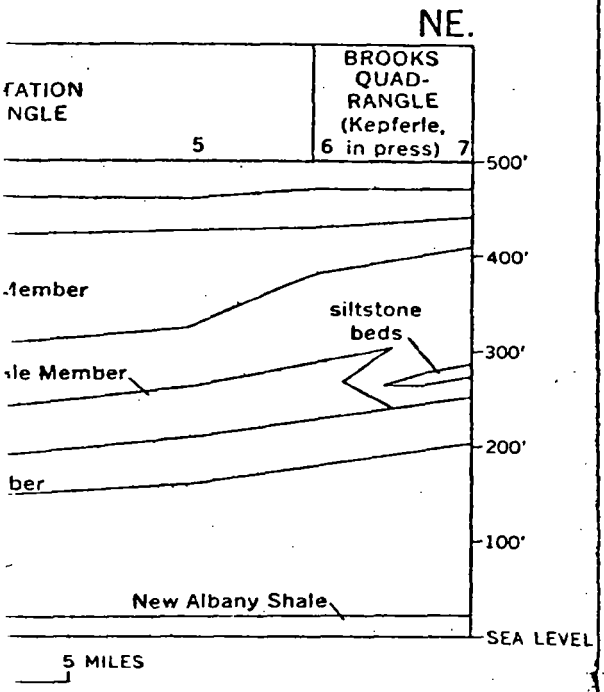
	µg/l
Hexachlorocyclopentadiene	1
Hexachloronorbornadiene	1
Octachlorocyclopentene	1
Heptachloronorbornene	1
Hexachlorobenzene	1
Chlorinated Pesticides	1
Other Nonchlorinated Organics	2

Figure 2
SAMPLE LOCATIONS
NEAR BRICKYARD



contoured horizon missing. Arrows indicate direction of dip. Contour interval 20

SAMPLE LOCATIONS NEAR 13.68 ACRE FARM



red to equivalent units on diagrammatic
litt County line based on sections at lo-
ey Gap; 3, Pendleton Hill; 4, Samuel Hill;
tical exaggeration 44X.

GEOLOGIC MAP OF THE VALLEY STATI